

REMARKS

The indication that claims 5, 6 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, is acknowledged. Such claims have been retained in dependent form at this time.

Applicants also acknowledge the withdrawal from consideration of claims 7, 8 and 11 - 30, but note that such withdrawn claims depend directly or indirectly from claim 1, which is the only independent claim in this application, such that claim 1 is a generic claim, and upon allowance of claim 1, the withdrawn claims should be considered and found allowable.

By the present amendment, claims 1, 3 and 30 - 32 have been amended to clarify and recite further features of the present invention, with claim 1 also being amended to correct the grammatical error noted by the Examiner in objecting to claims 1 - 6, 9, 10 and 31 - 33. Accordingly, such objection should now be overcome.

With regard to the amendment of claim 1, claim 1 has been amended to clarify the fact that in accordance with the present invention, the at least one of the plurality of light emitting tubes has plural kinds of phosphors in which each of the plural kinds of phosphors of the at least one light emitting tube has a different luminance response with respect to the luminance response of another of the plural kinds of the phosphors of the at least one light emitting tube. Further, claim 1 has been amended to recite the feature of a light source drive circuit controlling the light source, and that the light source drive circuit controls a luminance factor area of light from one phosphor of a plural kinds of phosphors of the at least one of the plurality of light emitting tubes or a change in luminance factor per time of the light of the one

phosphor to that of light from any other phosphor of the plural kinds of phosphors of the at least one of the plurality of light emitting tubes and at least one of a luminance rise time when the light source changes from the turned-off state to the turned-on state and a luminance fall time when the light sources changes from the turned-off state to the turned off-state. Claims 3 and 30 - 32 have been amended to recite the feature that the luminance of the plural kinds of phosphors is controlled by a current value of current applied by the light source drive circuit to the at least one of the light emitting tubes.

With the aforementioned structural arrangement, as now recited in claim 1 and the dependent claims, the problem of color deviation, when using plural phosphors in the light emitting tube of a liquid crystal display is overcome, noting that as described at pages 5 - 7 of the specification of this application, "the color deviation due to different phosphors is referred to as a problem of color misregistration". As described in the specification, a fluorescent tube which is filled with a plurality of fluorescent materials such as a red color phosphor, a green color phosphor and a blue color phosphor result in that the rise time of luminance and the fall time of luminance for the different color phosphors have different speeds. As described in the paragraph bridging pages 6 and 7 of the specification, the luminance rise time and luminance fall time for the blue phosphor material is generally shorter than 1 msec, the luminance rise time and luminance fall time of the red phosphor material is in a range of 3 to 4 msec, and the luminance rise time and the luminance fall time of green phosphor material is generally in a range of 6 to 7 msec. Thus, as now recited in claim 1, each of the phosphors of the at least one light emitting tube has a different luminance response with respect to another of the phosphors, and the light source drive circuit which controls the light source controls a

luminance fact area of light from one phosphor of the plural kinds of phosphors of the at least one light emitting tube or a change in luminance factor per time of the light of the one phosphor of the plural kinds of phosphors of the at least one light emitting tube so as to be substantially equal to that of light from any other phosphor of the plural kinds of phosphors of the at least one light emitting tube in at least one of a luminance rise time when the light source changes from the turned-off state to the turned-on state and a luminance fall time when the light source changes in the turned-on state to the turned-off state. Claim 3 recites controlling a current value of a current applied by the light source drive circuit wherein, as described in the specification by applying appropriate driving currents, the shortest time for one phosphor is increased and the longest time for another phosphor is decreased so that the times for the one and any other of the different phosphors becomes substantially equal to one another in at least one of luminance rise time and luminance fall time. Claims 30 - 32 have been amended in a similar manner. Applicants submit that such features, as now clearly recited in claim 1 and the dependent claims, are not disclosed or taught in the cited art, as will become clear from the following discussion.

As to the rejection of claims 1 - 4, 9, 32 and 33 under 35 USC 103(a) as being unpatentable over Hirakata (US 2002/0036608) in view of Ohno (US 5,825,124); and the rejection of claim 31 under 35 USC 103(a) as being unpatentable over Hirakata (US 2002/0036608) in view of Ohno (US 5,825,124) and Nitta (US 2002/0057238); such rejections are traversed insofar as they are applicable to the present claims, as amended, and reconsideration and withdrawal of the rejections are respectfully requested.

In applying Hirakata to claim 1 of this application, the Examiner apparently recognizes that Hirakata does not disclose or teach the recited features of claim 1. More particularly, the Examiner indicates that "As shown in Fig. 18b - e, increasing the current shrinks the period of rise and fall times of the backlight brightness. Since this backlight brightness measurement is taken as a whole, however includes multiple colored phosphors [00192], it is understood that shrinking these waveforms shrinks the rise and fall times of each phosphor making them substantially equal. Further, there is no mention of any phosphor extremes that might attribute to longer rise/fall times than those illustrated; Fig. 10, 11d and 18b-e". (Emphasis added). More particularly, as recognized by the Examiner:

Hirakata does not expressly disclose wherein a luminance factor area of light from one phosphor of said plural kinds of phosphors of said at least one of said plurality of light emitting tubes or a change in luminance factor per time of light of said one phosphor of said plural kinds of phosphors of said at least one of said plurality of light emitting tubes is substantially equal to that of light from any other phosphor of said plural kinds of phosphors of said at least one of said plurality of light emitting tubes in at least one of luminance rise time when said light source changes from said turned-off state to said turned-on state and a luminance fall time when said light source changes from said turned-on state to said turned-off state. (emphasis added).

Likewise, applicants submit that Hirakata does not disclose that the plural kinds of phosphors of the at least one light emitting tube have different luminance response with respect to one another, nor that a light source drive circuit controls the light source so that the light source drive circuit controls a luminance factor area of light or a change of luminance factor per time of the light of the light of the one phosphor of the plural kinds of phosphors of the one light emitting tube having a different luminance response with respect to another phosphor of the plural kinds of phosphors of the one light emitting tube so that the luminance factor area or the change in luminance factor area per time of the light from the one phosphor is

substantially equal to the luminance factor area or a change in luminance factor are per time of light from any other phosphor of the plural kinds of phosphors of the light emitting tube in at least one of a luminance rise time and a luminance fall time.

Irrespective of the Examiner's contentions by the Examiner, such features are not disclosed or taught by Hirakata, and applicants submit that claim 1 and the dependent claims recite features which patentably distinguish over Hirakata in the sense of 35 USC 103, and all claims should be considered allowable thereover.

The Examiner recognizing the deficiency of Hirakata, cites Ohno as disclosing light emitting tubes with multiple phosphors, wherein the "chemical activator of green and blue phosphors is altered in order to decrease their afterglow times (luminance factor area of light during fall time) and make them substantially equal to that of red which is shorter resulting in red, green and blue phosphors in a lighting tube all with substantially equal fall times and therefore the factor area of light during that fall time [col 2, lines 19 - 22, 26 - 31, 51 - 67; col. 3, lines 31 - 42; col. 5, lines 33 - 42])".

(emphasis added). Thus, as recognized by the Examiner, Ohno discloses the making of luminance response characteristics of red, blue, and green phosphors substantially equal by adjusting the composition of the blue and green phosphors with respect to the red phosphor. Thus, Ohno fails to provide any disclosure or teaching of a light source drive circuit controlling the light source and the light source drive circuit controlling a luminance factor area of light or a change in luminance factor per time of the light of one phosphor of the plurality of kinds of phosphors one light emitting tube with respect to another phosphor of the plural kinds of phosphors of the one light emitting tube so that the luminance factor of light or the change in luminance factor per time of the light of the different phosphors of the one light emitting tube becomes substantially equal in at least one of a luminance rise time

and a luminance fall time. Applicants submit that since such feature is not disclosed by Hidakata and is not disclosed by Ohno, the proposed combination fails to provide the aforementioned recited features of claim 1 and the dependent claims in the sense of 35 USC 103. Accordingly, all claims should be considered allowable thereover.

As to the dependent claims, irrespective of the contentions by the Examiner, the dependent claims recite further features which when considered in conjunction with base claim 1 further patentably distinguish over the proposed combination of Hidakata and Ohno, such that all claims should be considered allowable thereover.

With respect to dependent claim 31, based upon the addition of Nitta to the combination of Hidakata and Ohno, whether or not Nitta discloses that a current applied to at least one of the plurality of light emitting tubes has at least two values, Nitta does not overcome the deficiencies of the combination of Hidakata and Ohno, as pointed out above, with respect to claim 1, and therewith the dependent claims of this application. Accordingly, applicants submit that claim 31 also recites features which patentably distinguish over the combination of Hidakata, Ohno and Nitta in the sense of 35 USC 103, and this claim should also be considered allowable over the cited art.

For the foregoing reasons, applicants submit that claim 1 and therewith the dependent claims recite features which patentably distinguish over the cited art and since claim 1 and the dependent claims should now be in condition for allowance. Since claim 1 is a generic claim, applicants submit that the claims which stand withdrawn from consideration and depend directly or indirectly from claim 1, should be considered, and found allowable therewith.

In view of the above amendments and remarks, applicants submit that all claims present in this application should now be in condition for allowance and issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 1113.45152X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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